

**IN THE DRAWINGS:**

The attached drawings include both a Replacement and an Annotated sheet for Figure 3.

Attachment:        Replacement Sheet for Figure 3  
                         Annotated Sheet for Figure 3

## REMARKS

Claims 1 through 38 are pending in the application. With this amendment claim 3 has been amended and claims 19-38 have been cancelled as being drawn to a non-elected invention. Applicants reserve the right to pursue claims 19-38 in a divisional application.

The drawings have been objected to under 37 CFR §1.83(a). The Examiner states that the magnetic field extending to the substrate in claims 14-17 must be shown or the features canceled from the claims.

In order to overcome the objection to the drawing, revised Figure 3 is submitted herewith particularly illustrating one embodiment of the magnetic field lines extending to the substrate surface. The specification has also been amended on page 10, fourth full paragraph to refer to the magnetic field lines as reference number 25 as now indicated in corresponding Figure 3. Accordingly, it is respectfully submitted that no new matter has been added and approval of the replacement sheet is earnestly solicited.

Claims 1-2 and 10-11 have been rejected under 35 U.S.C. 102(b) as being anticipated by Pinarbasi US Patent No. 5,492,605. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi US Patent 5,492,605 as applied to claims 1 and 2, and further in view of Gupta et al, *Vacuum Technology & Coating*. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi US Patent 5,492,605 as applied in claim 1, further in view of Donohue et al US Pub 2003/0024808.

The Examiner states that with respect to claim 1, Pinarbasi discloses an ion beam sputter deposition system and method for the fabrication of multilayered thin film structures, and that using a magnetron sputter-deposition device for fabrication of thin film devices is well known to the art; and further discloses that during operation, a vacuum chamber is maintained at an internal operation pressure on the order of  $1 \times 10^{-4}$  Torr by a vacuum pump; and depicts figure 2 having a target and substrate, with a distance between the target and the substrate.

It is respectfully submitted that the Pinarbasi reference cannot anticipate nor provides a scope or content that suggests the present invention as claimed. The

Pinarbasi reference discloses a vacuum chamber 81 maintained at an internal operation pressure on the order of  $1 \times 10^{-4}$  Torr ( $1.33 \times 10^{-4}$  mbar), see Col. 12, lines 30-31. In Example 1 of the present invention deposition of barrier layers BL1 and BL2 utilize a corresponding gas pressure of  $7 \times 10^{-4}$  mbar. Example 2 utilizes corresponding pressures that are  $2 \times 10^{-4}$  mbar to  $2 \times 10^{-4}$  mbar. The pressure values utilized in the present invention are higher than those of Pinarbasi. Claims 1 and 2 of the present invention are not directed to pressure values, but are directed to the mean free path of particles. Independent claim 1 states that the mean free path of particles is chosen smaller than the distance between the target and the substrate. In Col. 5, lines 54-59 of Pinarbasi, it is disclosed that the mean free path is larger than the distance between the target and substrate, which is in the range of 25 to 30 centimeters.

Accordingly, it is respectfully submitted that Pinarbasi cannot anticipate nor provide any scope or content to render independent claim 1 obvious, and the claims dependent thereon.

With respect to the remaining §103 rejections, it is respectfully submitted that the additionally cited references cannot add provide any scope or content that would render the invention set forth in independent claim 1 obvious alone, or in combination with any of the other cited references.

Claims 3-4, 8-9, 12-13, 15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Donohue et al US Pub. 2003/0024808. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Donohue et al US Pub. 2003/0024808 as applied to claim 3 above, and further in view of Telford et al US Patent 5,643,633.

With respect to Claim 3, the Examiner states that Donohue discloses a method of sputtering a layer from a target using Krypton as the sputtering gas at a pressure of less than 1 millitorr (abstract), further discloses that the distance from the target to the wafer is 430 mm, further states that the pressure is kept at 0.85 millitorr, and maintaining the pressure at 0.85 millitorr and the distance from target to wafer at 430 mm would result in a pressure and distance product of approximately 4.87 cmPa, thus larger than 2.0 cmPa.

It is respectfully submitted that the Donohue reference cannot anticipate nor

provide a scope or content that would render obvious the present invention as claimed.

Independent claim 3 has been amended to further define that a multilayer system is fabricated including two or more layers and having at least one layer resulting from said at least one deposition stage. Support for the amendment is found throughout the specification as filed, for example see Page 1, last full paragraph, where a multilayer systems are defined as including two or more layers, Page 7, second and third full paragraphs and the Examples. Accordingly, no new matter has been added. Donohue teaches methods of sputtering a layer on a substrate having a plurality of submicron sized recesses or openings, see Paragraph [0001]. There is no anticipation nor scope or content that a multilayer system can be produced including at least one layer resulting from the said at least one claimed deposition stage. There is no teaching in Donohue that the noted pressure and distance product of 4.87 cmPa indicated by the Examiner would be advantageous in the process for producing a multilayer system.

Claim 18 is rejected under 35 U.S.C. 102(e) as being anticipated by Miyamura et al US Patent 6,635,155.

It is respectfully submitted that the Miyamura reference cannot anticipate nor provide a scope or content that renders claim 18 obvious. Miyamura discloses a method for preparing an optical thin film utilizing a magnetron sputtering apparatus. Only the Background of the patent, see column 1, line 17, describes an electron beam evaporation process. The invention of Miyamura, however, is clearly directed to magnetron sputtering apparatus, see for example column 2, lines 53-62, and cannot anticipate the specifically claimed process set forth in claim 18. Claim 18 states that at least one deposition stage by sputtering or magnetron sputtering is performed. As far as the control of gases is mentioned there has to be taken into consideration in Miyamura, that besides an inert gas, a reactive gas such as O<sub>2</sub>, see for example column 2, line 63 through column 3, line 4, is utilized.

In column 3 of Miyamura, it is disclosed that the chamber is evacuated to a pressure of  $1 \times 10^{-4}$  Pa. The reactive sputtering process is conducted with a pressure of  $1.3 \times 10^{-1}$  Pa. Accordingly, there is no anticipation of regulating a working gas pressure, a distance between a target and substrate, or combinations thereof, at this

deposition stage so that the mean free path of particles are chosen smaller than the distance between target and substrate.

Should the Examiner have any questions or concerns regarding this response, a telephone call to the undersigned is greatly appreciated in order to expedite allowance of the application.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Daniel J. Hudak, Jr.", written in a cursive style.

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